

CLAIMS

1. A bit for a rotary cutting tool, comprising:
 - a body having a longitudinal axis;
 - a first cutting element coupled to the body, the cutting element having a cutting surface positioned radially outward from the body, the cutting element also having a threaded region; and
 - a rotatable actuator coupled to the cutting element, the actuator having a threaded section which matingly engages the threaded region on the cutting element, the actuator being movable between a first position and a second position, wherein at least part of the cutting surface moves radially outward when the actuator moves from the first position to the second position.
2. The bit for a rotary cutting tool of claim 1, further comprising:
 - a second cutting element coupled to the body, the second cutting element having a second cutting surface;

wherein movement of the actuator from the first position to the second position also moves at least part of the second cutting element radially outward.
3. The bit for a rotary cutting tool of claim 2, wherein:
 - the first and second cutting elements are moved the same amount by the actuator when the actuator moves from the first position to the second position.
4. The bit for a rotary cutting tool of claim 1, wherein:
 - the actuator is positionable at any intermediate position between the first and second positions.
5. The bit for a rotary cutting tool of claim 1, wherein:
 - the first cutting element changes in angular orientation with respect to the longitudinal axis when the actuator moves from the first position to the second position.

6. The bit for a rotary cutting tool of claim 1, further comprising:
a locking element which is movable from an unlocked position to a locked position, the locking element permitting movement of the actuator and the first cutting element when in the unlocked position and preventing movement of the actuator and first cutting element when in the locked position.
7. A bit for a rotary cutting tool, comprising:
a body having a longitudinal axis, the body being rotated around the longitudinal axis when mounted to a rotary cutting tool;
a first cutting element coupled to the body, the first cutting element having a cutting surface positioned radially outward from the body; and
a rotatable actuator coupled to the cutting element, the actuator being rotatable about an axis which is less than 10 degrees from the longitudinal axis of the body, wherein rotation of the actuator moves the actuator longitudinally between a first position and a second position, at least part of the cutting surface moving radially outward when the actuator moves from the first position to the second position.
8. The bit for a rotary cutting tool of claim 7, further comprising:
a second cutting element coupled to the body, the second cutting element having a second cutting surface;
wherein movement of the actuator from the first position to the second position also moves at least part of the second cutting element radially outward.
9. The bit for a rotary cutting tool of claim 8, wherein:
the first and second cutting elements are moved the same amount by the actuator when the actuator moves from the first position to the second position.
10. The bit for a rotary cutting tool of claim 7, wherein:
the actuator is positionable at any intermediate position between the first and second positions.

11. The bit for a rotary cutting tool of claim 7, wherein:
the first cutting element changes in angular orientation with respect to the longitudinal axis when the actuator moves from the first position to the second position.
12. The bit for a rotary cutting tool of claim 7, wherein:
the actuator has a first engagement surface which engages the first cutting element; and
the first cutting element has a first groove in which the first engagement surface is positioned.
13. The bit for a rotary cutting tool of claim 7, wherein:
the first engagement surface is substantially spherical.
14. The bit for a rotary cutting tool of claim 7, further comprising:
a second cutting element having a second groove;
the actuator being positioned in the second groove to move the second cutting element when the actuator moves from the first position to the second position.
15. The bit for a rotary cutting tool of claim 14, wherein:
the first engagement surface is positioned in the first and second grooves.
16. The bit for a rotary cutting tool of claim 14, wherein:
the actuator has a second engagement surface spaced apart from the first engagement surface, the second engagement surface being positioned in the second groove.
17. The bit for a rotary cutting tool of claim 7, further comprising:
a locking element which is movable from an unlocked position to a locked position, the locking element permitting movement of the actuator and the first cutting element when in the unlocked position and preventing movement of the actuator and first cutting element when in the locked position.

18. The bit for a rotary cutting tool of claim 7, wherein:
the axis of rotation of the actuator is colinear with the longitudinal axis of the body.
19. A bit for a rotary cutting tool, comprising:
a body having a longitudinal axis;
a first cutting element coupled to the body, the first cutting element having a first cutting surface positioned radially outward from the body;
a second cutting element coupled to the body, the second cutting element having a second cutting surface positioned radially outward from the body;
an actuator coupled to the first and second cutting elements, the actuator being movable between a first position and a second position, wherein at least part of the first and second cutting surfaces move radially outward when the actuator moves from the first position to the second position.
20. The bit for a rotary cutting tool of claim 19, wherein:
the actuator is a rotatable element having an axis of rotation.
21. The bit for a rotary cutting tool of claim 19, wherein:
the axis of rotation of the rotatable element is less than 10 degrees from the longitudinal axis of the body.
22. The bit for a rotary cutting tool of claim 19, wherein:
the first and second cutting elements are moved the same amount by the actuator when the actuator moves from the first position to the second position.
23. The bit for a rotary cutting tool of claim 19, wherein:
the actuator is positionable at any intermediate position between the first and second positions.

24. The bit for a rotary cutting tool of claim 19, wherein:
the cutting element changes in angular orientation with respect to the longitudinal axis when the actuator moves from the first position to the second position.
25. The bit for a rotary cutting tool of claim 19, wherein:
the actuator has a first engagement surface which engages the first cutting element; and
the first cutting element has a first groove in which the first engagement surface is positioned.
26. The bit for a rotary cutting tool of claim 19, wherein:
the first engagement surface is substantially spherical.
27. The bit for a rotary cutting tool of claim 19, wherein:
the second cutting element has a second groove;
the actuator being positioned in the second groove to move the second cutting element when the actuator moves from the first position to the second position.
28. The bit for a rotary cutting tool of claim 27, wherein:
the first engagement surface is positioned in the first and second grooves.
29. The bit for a rotary cutting tool of claim 19, wherein:
the actuator has a second engagement surface spaced apart from the first engagement surface, the second engagement surface being positioned in the second groove.
30. The bit for a rotary cutting tool of claim 19, further comprising:
a locking element which is movable from an unlocked position to a locked position, the locking element permitting movement of the actuator and the first cutting element when in the unlocked position and preventing movement of the actuator and first cutting element when in the locked position.

31. The bit for a rotary cutting tool of claim 19, wherein:
an axis of rotation of the actuator is colinear with the longitudinal axis of the body.
32. A bit for a rotary cutting tool, comprising:
a body having a longitudinal axis;
a first cutting element coupled to the body, the cutting element having a cutting surface positioned radially outward from the body;
an actuator coupled to the cutting element, the actuator being movable between a first position and a second position, the actuator moving longitudinally when moving from the first position to the second position, wherein at least part of the cutting surface moves radially outward when the actuator moves longitudinally from the first position to the second position.
33. The bit for a rotary cutting tool of claim 32, further comprising:
a second cutting element coupled to the body, the second cutting element having a second cutting surface;
wherein movement of the actuator from the first position to the second position also moves at least part of the second cutting element radially outward.
34. The bit for a rotary cutting tool of claim 33, wherein:
the first and second cutting elements are moved the same amount by the actuator when the actuator moves from the first position to the second position.
35. The bit for a rotary cutting tool of claim 32, wherein:
the actuator is positionable at any intermediate position between the first and second positions.

35. The bit for a rotary cutting tool of claim 32, wherein:
the first cutting element changes in angular orientation with respect to the longitudinal axis when the actuator moves from the first position to the second position.
36. The bit for a rotary cutting tool of claim 32, wherein:
the actuator has a first engagement surface which engages the first cutting element; and
the first cutting element has a first groove in which the first engagement surface is positioned.
37. The bit for a rotary cutting tool of claim 32, wherein:
the first engagement surface is substantially spherical.
38. The bit for a rotary cutting tool of claim 32, further comprising:
a second cutting element having a second groove;
the actuator being positioned in the second groove to move the second cutting element when the actuator moves from the first position to the second position.
39. The bit for a rotary cutting tool of claim 38, wherein:
the first engagement surface is positioned in the first and second grooves.
40. The bit for a rotary cutting tool of claim 38, wherein:
the actuator has a second engagement surface spaced apart from the first engagement surface, the second engagement surface being positioned in the second groove.
41. The bit for a rotary cutting tool of claim 32, further comprising:
a locking element which is movable from an unlocked position to a locked position, the locking element permitting movement of the actuator and the first cutting element when in the unlocked position and preventing movement of the actuator and first cutting element when in the locked position.

42. The bit for a rotary cutting tool of claim 32, wherein:
the actuator is rotatable about an axis of rotation.
43. The bit for a rotary cutting tool of claim 42, wherein:
the axis of rotation of the rotatable element is less than 10 degrees from the longitudinal axis of the body.
44. The bit for a rotary cutting tool of claim 42, wherein:
the axis of rotation of the actuator is colinear with the longitudinal axis of the body.
45. A bit for a rotary cutting tool, comprising:
a body having a longitudinal axis;
a first cutting element coupled to the body, the cutting element having a cutting surface positioned radially outward from the body;
an actuator coupled to the first cutting element, the actuator being movable between a first position and a second position, wherein the angular orientation of the cutting surface relative to the longitudinal axis changes when the actuator moves from the first position to the second position.
46. The bit for a rotary cutting tool of claim 45, further comprising:
a second cutting element coupled to the body, the second cutting element having a second cutting surface;
wherein movement of the actuator from the first position to the second position also moves at least part of the second cutting element radially outward.
47. The bit for a rotary cutting tool of claim 46, wherein:
the first and second cutting elements are moved the same amount by the actuator when the actuator moves from the first position to the second position.

48. The bit for a rotary cutting tool of claim 45, wherein:
the actuator is positionable at any intermediate position between the first and second positions.
49. The bit for a rotary cutting tool of claim 45, wherein:
the cutting element changes in angular orientation with respect to the longitudinal axis when the actuator moves from the first position to the second position.
50. The bit for a rotary cutting tool of claim 45, wherein:
the actuator has a first engagement surface which engages the first cutting element; and
the first cutting element has a first groove in which the first engagement surface is positioned.
51. The bit for a rotary cutting tool of claim 45, wherein:
the first engagement surface is substantially spherical.
52. The bit for a rotary cutting tool of claim 45, further comprising:
a second cutting element having a second groove;
the actuator being positioned in the second groove to move the second cutting element when the actuator moves from the first position to the second position.
53. The bit for a rotary cutting tool of claim 52, wherein:
the first engagement surface is positioned in the first and second grooves.
54. The bit for a rotary cutting tool of claim 52, wherein:
the actuator has a second engagement surface spaced apart from the first engagement surface, the second engagement surface being positioned in the second groove.

55. The bit for a rotary cutting tool of claim 45, further comprising:
a locking element which is movable from an unlocked position to a locked position, the locking element permitting movement of the actuator and the first cutting element when in the unlocked position and preventing movement of the actuator and first cutting element when in the locked position.
56. The bit for a rotary cutting tool of claim 45, wherein:
the axis of rotation of the actuator is colinear with the longitudinal axis of the body.
57. The bit for a rotary cutting tool of claim 45, wherein:
the actuator is rotatable about an axis of rotation.
58. The bit for a rotary cutting tool of claim 57, wherein:
the axis of rotation of the rotatable element is less than 10 degrees from the longitudinal axis of the body.
59. The bit for a rotary cutting tool of claim 57, wherein:
the axis of rotation of the actuator is colinear with the longitudinal axis of the body.